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A DESCRIPTION OF THE NEST AND EGGS OF THE PALE-EYED THRUSH (*PLATYCICHLA LEUCOPS*), WITH NOTES ON INCUBATION BEHAVIOR

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ABSTRACT.—I present a description of the nest, eggs, and nestlings of the Pale-eyed Thrush (*Platycich leucops*). In addition, I present data on nest temperatures and incubation patterns. Two cup-shaped nests we found at a cloud forest site in the Central Andes of Colombia, both made of moss and containing two greenis colored eggs with brown blotches. Generally, the incubating female spent the night on the nest. She left the ne at dawn, returned several times during the day and at dusk. Only the female incubated, but the male helpe feed the nestlings. Nest temperature varied during incubation between 24° and 27° C, which was several degre above ambient temperature. There were differences between the two nests in the rate of cooling after the fema left the nest at dawn, probably related to nest placement. Nest microclimate was affected by microhabitat ar adult incubation behavior. *Received 24 January 2005, accepted 28 August 2005.*

Thrushes (Turdinae) belong to one of the most widely distributed avian families and occupy a variety of habitats throughout the world (Clement 2000). Although many of the temperate-zone thrush species have been well studied, little is known about thrushes occurring in the New World tropics. There are only two species of *Platycichla*, both of which are restricted to South America, including the island of Trinidad (Ridgley and Tudor 1989, Fjeldså and Krabbe 1990). In contrast, the closely related *Turdus* genus is widespread and species rich (Clement 2000). The two genera are weakly differentiated, leading some authors to suggest that *Platycichla* should be merged with *Turdus* (e.g., Ridgley and Tudor 1989). Mitochondrial DNA sequence data seem to support this suggestion (Klicka et al. 2005).

The Pale-eyed Thrush (*Platycichla leucops*) inhabits montane evergreen forest at elevations of 1,300–2,100 m in the northern and Central Andes and in the tepui region of southern Venezuela and adjacent Guyana and Brazil (Hilty and Brown 1986, Ridgley and Tudor 1989). This species is uncommon and seemingly local in humid montane forest, where it occurs singly, in pairs, or in group that congregate at fruiting trees in the fores canopy (Hilty and Brown 1986, Ridgley an Tudor 1989, Fjeldså and Krabbe 1990). Fo the *Turdus* genus, there is abundant information on incubation and nestling periods, particularly for those species inhabiting the temperate zone. However, this information i lacking for most of the Neotropical species and little is known about the *Platycichla* genus (Hilty and Brown 1986, Ricklefs 1997 Clement 2000).

Here, I describe the nest, eggs, and nestlings of the Pale-eyed Thrush and make relevant comparisons to the well-studied thrushes of the *Turdus* genus. In addition, I describe the nest microclimate and incubation patterns of the Pale-eyed Thrush.

METHODS

Study site.—The study was conducted in the 489-ha Santuario de Fauna y Flora Otún-Quimbaya (4° 43′ 11″ N, 75° 28′ 70″ W), on the western slope of the Central Range of the Andes, east of Pereira, Department of Risaralda, Colombia. The area is a mosaic of forest patches (e.g., *Cecropia telealba*, *Siparuna echinata*, *Saurauia brachybotrys*, *Ficus andicola*, *Prestoea acuminata*, *Palicourea angustifolia*, *Miconia acuminifera*) that differ in age—most trees are 40 years or older—and patches are mixed with plantations of Chinese ash (*Fraxinus chinensis*). Small patches of mature, native forest (e.g., *Magnolia hernandezii*, *Ficus killipii*, *Prumnopytis harmsiana*,

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Juglans neotropica, *Aniba perutilis*) occur on the ridges (Londoño 1994).

Elevations of the study site range from 1,900 to 2,100 m. Mean maximum and minimum annual temperatures are 20.2° and 11.3° C, respectively. Mean annual rainfall is 2,700 mm and is distributed bimodally; dry seasons (<100 mm rainfall per month) occur December–January and June–August (Ríos et al. 2005).

Nest monitoring.—I monitored nests by visiting them at different times in the morning and afternoon. To record patterns of incubation and nest microclimate, I placed a Hobo data logger (Onset Computer Corporation, Bourne, Massachusetts) in each nest. The units had two temperature sensors: one was placed inside the nest cup (at the bottom) and the other was placed outside the nest at the same level as—and 20 cm from—the first sensor. These devices measure temperature with an accuracy of ±0.36° C with a resolution of ±0.2° C at +20° C. The units were set to record simultaneously the inner and outer nest temperatures every 2 min. During the day, I assumed that females had left their nest to forage if the nest temperature dropped below the range of incubation values known from nocturnal records (when females typically spent all of their time on the nest).

RESULTS

Nest description and incubation patterns.—I report on two nests of the Pale-eyed Thrush. On 15 April 2003, I found the first nest next to a tree-fall gap within a Chinese ash plantation, 35 m from a creek. The nest was 1 m above ground in a 10-cm depression where the three main branches of a live ash (dbh 35 cm) formed a crotch. The nest, built in a clump of epiphytic *Anthurium* sp. (Araceae), was 40 mm deep, had a moss exterior, and an interior lining of black rhizomorph fibers. Because the nest was placed in a tree crotch, the cup was not perfectly round. The nest's inner dimensions were 96.3 × 70.0 mm, the outer dimensions were 104.6 × 132.4 mm, the height was 61.6 mm, and the nest wall averaged 24.7 mm thick. It contained two greenish-colored eggs with brown blotches (concentrated at one end) that varied in shape and density. The eggs differed slightly in size (26.1 × 20.0 mm and 27.4 × 19.4 mm), but weighed the same (5.25 g).

During the incubation period, 35 observations at different times of day revealed that only the female incubated. Internal temperatures indicated that the female consistently left the nest at dawn (05:30 EST) and returned at dusk (18:00; Fig. 1A). (External nest temperatures were not recorded because the sensor failed.) Nocturnal nest temperatures (when the adult was sitting in the nest) varied between 24° and 27° C. On 18 April, the adult left the nest at approximately 01:00, after which the nest temperature dropped to the lowest recorded (~11° C) during the incubation period. For the next 2 days, the female did not incubate during daylight hours (Fig. 1A). As a result, the general incubation pattern at this nest was highly irregular (Fig. 2A, B). On 22 April, the eggs were depredated. I collected the nest and deposited it in the ornithological collection of the Instituto de Ciencias Naturales, Universidad Nacional de Colombia (ICN nest collection catalog # ICN-N193).

On 14 May 2003, M. M. Ríos found a second nest 25 m from a creek in mature, native forest. The nest was located in a *Dendropanax macrophyllum* (Araliaceae) tree 1.3 m above ground and inside a 17-cm diameter hole of a broken limb. The nest cup was 64.4 mm deep, and, like the first nest, was not perfectly round because it was constrained by the shape of the hole. The nest's inner dimensions were 71.1 × 82.1 mm, the outer dimensions were 110.2 × 130.0 mm, the height was 81.6 mm, and the nest wall averaged 37.6 mm thick. The nest contained two greenish-colored eggs with brown blotches, resembling those of the first nest. These eggs, however, were slightly larger (28.7 × 20.0 mm and 30.6 × 20.0 mm), and each weighed 5.5 g. The nest was also constructed of mosses and had a lining of black rhizomorphs. After activating the temperature data logger on 15 May, I left the field site on 20 May and did not return until 2 June, at which time I observed two nestlings in the nest. A substantial temperature increase inside the nest suggested that the eggs hatched late in the afternoon of 27 May (Fig. 1C). On 2 June (day 6 after hatching), the nestlings had yellow down on their heads and backs, their skin was orange, and feather sheaths were emerging on their wings and middle backs.

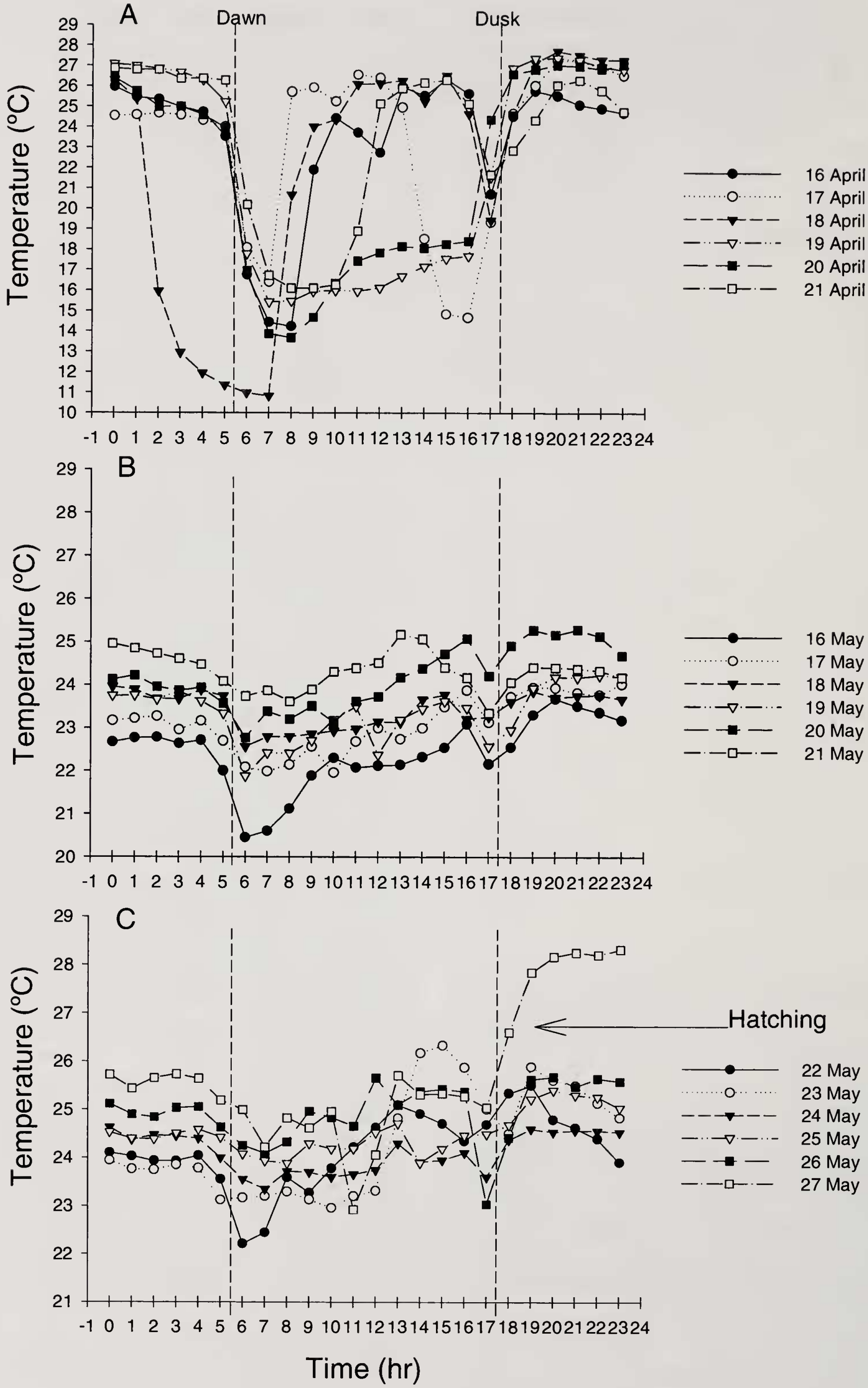

FIG. 1. Mean hourly internal nest temperatures at two Pale-eyed Thrush nests in the Central Andes of Colombia, 2003. (A) Nest 1: 16–21 April; (B) nest 2: 16–21 May; and (C) nest 2: 22–27 May. Temperatures recorded every 2 min during the incubation period with a Hobo Data Logger.

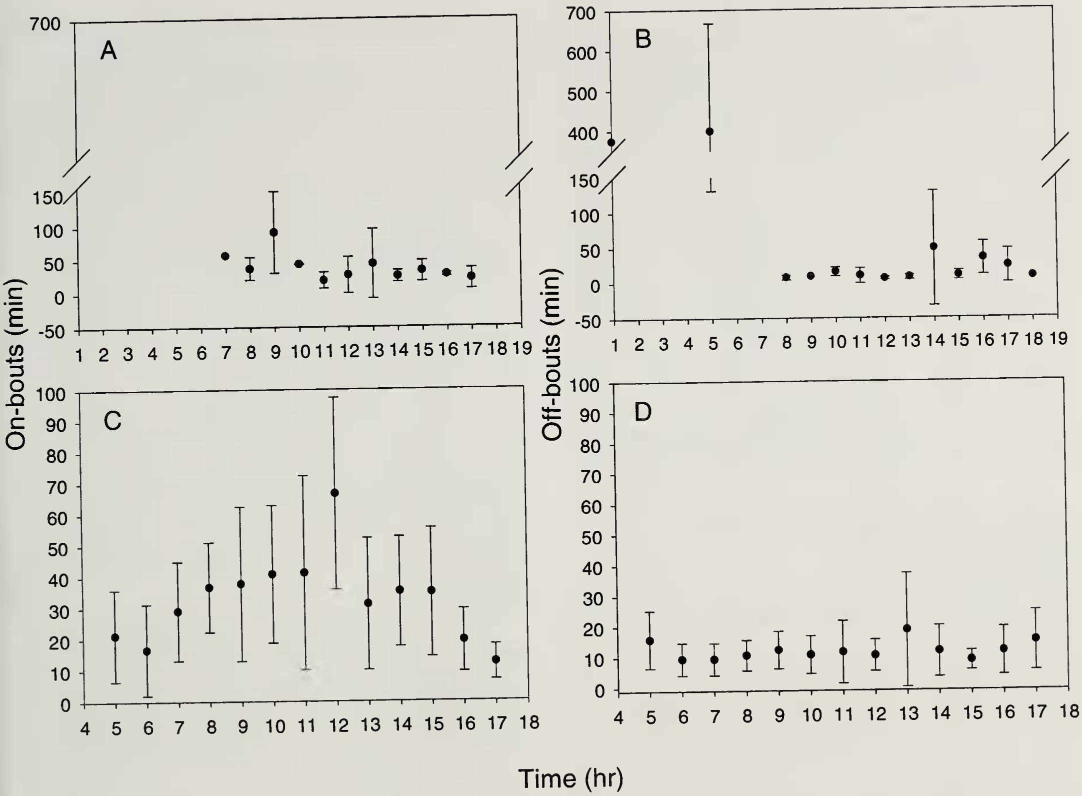

FIG. 2. Female attentiveness at two Pale-eyed Thrush nests in the Central Andes of Colombia, 2003. (A) Nest 1: mean incubation time, 16–21 April; (B) nest 1: mean time spent off the nest, 16–21 April; (C) nest 2: mean incubation time, 16–27 May; (D) nest 2: mean time spent off the nest, 16–27 May. Error bars are ± SD.

The nestlings weighed 24.3 and 23.3 g, and their eyes were slightly open. One day later the nestlings weighed 24.5 and 23.8 g, their feather sheaths were longer, and feather sheaths had begun to emerge on their heads. During the nestling stage, both the male and female responded to my presence with noisy alarm calls. I saw both parents feed the nestlings fruits of *Dendropanax macrophyllum*; I later found seeds of this fruit and insect parts in the nestlings' feces. By the morning of 4 June, the nestlings had been depredated. I collected the nest and deposited it in the ICN ornithological collection (catalog # ICN-N194). Photos of the nest, nestlings, and eggs are available at http://www.zoo.ufl.edu/gustavo/gallery.html.

Temperature data recorded in the second nest also indicated that the adult left the nest at dawn (05:30) and returned at dusk (18:00; Fig. 1B, C) and that the incubation pattern varied during the day. However, frequent off-bouts resulted in shorter incubation periods during the early morning and late afternoon compared with those of the first nest (Fig. 2C, D). The longest on-bouts occurred at midday, whereas the longest off-bouts occurred during the next hour (13:00).

DISCUSSION

The nest of *P. leucops* has been described previously only by Marin and Carrion (1991) and possibly by Goodfellow (1901). Nest shape and egg coloration of the Pale-eyed Thrush were similar to those described by Marin and Carrion (1991) and similar to descriptions for many other species in the thrush family (Hilty and Brown 1986, Ridgely and Tudor 1989, Stiles and Skutch 1989, Clement 2000). However, the nest-site locations of the previously described nests were different from those I describe here; the ones found in Ecuador were located in embankments (Marin and Carrion 1991). The nest of the congeneric

Yellow-legged Thrush (*P. flavipes*) is a shallow cup constructed of roots and mud, lined with moss and fine roots, and typically placed on a bank (ffrench 1976). Clutch size is two, and eggs are pale blue or greenish-blue marked with reddish-brown (ffrench 1976). The primary difference in the nests of the two *Platycichla* species is that Pale-eyed Thrushes apparently do not use mud in nest construction. Nest shape, nest materials, and egg coloration of the Pale-eyed Thrush are very similar to those of several species in the *Turdus* genus (Hilty and Brown 1986, Stiles and Skutch 1989, Clement 2000). Nest materials (e.g., moss exterior, black rhizomorphs in the lining), and the nest's low height are similar to those of *Catharus* spp. (*Turdus* nests are usually placed higher than *Catharus* nests; F. G. Stiles pers. comm.).

Typical of thrushes, only the female incubated, but both adults attended nestlings (Clement 2000). Based on the hatching date of the second nest, the Pale-eyed Thrush incubates for at least 13 days. Incubation periods reported for 21 species in the *Turdus* genus average 13 days (range = 11–18 days; Clement 2000); thus, the estimated incubation period of the Pale-eyed Thrush is within the range of *Turdus* spp. There also are no apparent differences in duration of incubation and nestling periods between tropical and temperate species of *Turdus*, although complete information is lacking for all but 2 of the 29 tropical species. As in many species, the clutches of temperate thrushes are larger than those of tropical thrushes (Ricklefs 1997). Because the Pale-eyed Thrush nestlings were depredated, I could not determine the length of their nestling period. It averages 14 days for the *Turdus* genus (range = 9–19 days; Clement 2000).

Nocturnal nest temperatures varied little, due to nearly 100% adult attentiveness. An exception occurred on the night of 18 April, when the female left the nest—possibly to avoid predation—and the nest temperature dropped to 11° C for at least 4 hr. Such behavior can have a strong influence on embryonic development (Turner 2002).

Nest microclimate, and therefore adult behavior at the nest, is determined by a variety of factors, including wind, rain, ambient temperature, nest orientation and shape, clutch size, and predation risk (Facemire et al. 1990, Sidis et al. 1994, Ghalambor and Martin 2002). Nest microclimate and temperature are probably affected by nest location and materials, especially for open-cup nests (Ar and Sidis 2002, Hansell and Deeming 2002, Hilton et al. 2004). Although I did not measure variables that may have influenced nest microclimate, potential microclimatic differences between nest locations were reflected in the rates of heat loss. These differences were clear when the adult left the nest at dawn: in the first nest the temperature dropped 10–12° C (Fig. 1A), but in the second nest the temperature dropped only 1–2.5° C (Fig. 1B, C). Maintaining nest temperatures during the day can affect the time adults need to spend in bouts of nest attentiveness (Ar and Sidis 2002); in turn, this can affect adult foraging time.

Although descriptions of nests are an important aspect of basic natural history information, they are lacking for many Neotropical bird species. Nest descriptions are crucial for understanding the mechanisms that may drive the high diversity of nest forms and locations, the causes of high predation rates among Neotropical bird species, and the factors that influence nest attendance behavior.

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